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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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SIDLEY AUSTIN BROWN & WOOD LLP			WARD, AARON S	
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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/527,368	OOTUKA ET AL.	
	Examiner	Art Unit	
	Aaron S. Ward	2675	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 23 June 2004.
 2a) This action is **FINAL**. 2b) This action is non-final.
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-4 and 6-32 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) Claim(s) _____ is/are allowed.
 6) Claim(s) 1-4 and 6-32 is/are rejected.
 7) Claim(s) _____ is/are objected to.
 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date: _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date: _____ | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

The amendment filed June 23, 2004 has been considered. Claims 1, 15, 18, 19 and 24 are amended, and new claims 25-32 are presented. Claims 1-4 and 6-32 are pending.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 6 and 20-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuzaki et al. (of record; hereinafter “Matsuzaki”), US 5,926,159 in view of Ono et al. (of record; hereinafter “Ono”) US 6,075,508.

As pertaining to claims 1 and 6, Matsuzaki discloses a liquid crystal display which has a liquid crystal display section 17, that uses a FLC or ferroelectric liquid crystal, in which the LC has storage characteristic (col. 1, lines 37-49), which is a memory effect because it has bistable properties (col. 1 line 46), which is sufficient to keep information displayed for at least a day without the application of voltage (i.e., the aligned state is maintained after the electric field is removed; col. 1 lines 44-45), a driving section 26 which drives the display section 17 (col. 4, lines 32-42), a control section 27 which controls to write currently displayed information on the display again at a specified time (col. 4, line 32-col. 5, line 40). Furthermore, Matsuzaki

discloses the control section 27 causes the driving section 26 to rewrite currently displayed information on the display section 17 upon the timers or counters 28 and 29 counting to a predetermined value (col. 4, line 32-col. 5, line 40).

As pertaining to claims 1 and 6, Matsuzaki does not disclose specifically a timer for detecting time elapsing and the timer beginning counting when information displayed on the display section is updated and the timer counting to a predetermined value corresponding to a predetermined period of time.

As pertaining to claims 1 and 6, Ono discloses a display control apparatus in which a refresh driving and partial rewrite driving for updating the display. A timer counts a time during which a rewrite operation in the VRAM is not performed. When a predetermined count time has elapsed, the CPU sends a signal representing the continuous number of display lines to the addressing generator to perform refresh display (col. 2, lines 52-67; col. 3, lines 1-5; col. 7, lines 49-58).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine the display control apparatus of Ono with Matsuzaki.

The suggestion/motivation for doing so would have been to provide an LCD that is able to keep an image on the display or screen by using memory effect, thereby using less power, and a timer, in conjunction with memory effect, that is used to update the last image on the display when the timer has counted to a predetermined value. This process or method is great because it would save or at least allow the LCD to have a longer "life" or to be used longer because considerable power is saved by the use of memory effect and the timer. Furthermore, the

information on the display or the speed at which the information can be displayed on the screen can also be increased due to the partial rewriting operation.

As pertaining to claim 20, it would be obvious that when the timer is counting down to a predetermined number that the image would automatically be refreshed whether an input is made or not. If an input is not made, the display would refresh the image on the screen once the timer has counted down to a predetermined number. If an input is made in order to refresh the screen then once that is input is made and the timer starts to count down again it would refresh the image again. Claim 20 is dependent on claim 1 and is rejected on the same basis and what is stated above.

As pertaining to claim 21, it is inherently known when an LCD uses a LC that has memory effect, that when the power or voltage is cut-off to the display an image is still kept on the screen due to the memory effect in LC and the voltage being kept on in order to display the image, but once the voltage or power is turned off the image is still kept on the screen. So by that trait, in order for the image to be refreshed, a voltage must be applied to the LC to activate the LC and pixels and thus the image can be refreshed. So in this use, once the timer has counted down to a predetermined number, the power would be restored and the image would be refreshed. Claim 21 is dependent on claim 1 and is rejected on the same basis and what is stated above.

2. Claims 2, 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuzaki and Ono as applied to claim 1 above, and further in view of Huang, US 6,268,840 (of record).

As pertaining to claim 2, Matsuzaki and Ono disclose what has previously been stated above.

As pertaining to claim 2, they do not disclose the use of chiral nematic liquid crystal, which exhibits a cholesteric phase, in the liquid crystal display device.

As pertaining to claim 2, Huang discloses a visual display that uses bistable chiral nematic liquid crystal that exhibits a cholesteric phase (col. 1, lines 17-22, col. 1, lines 30-31).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine the bistable chiral nematic liquid crystal of Huang with the LC of Matsuzaki and Ono.

The suggestion/motivation for doing so would have been to provide an apparatus that is better suitable to use bistable chiral nematic liquid crystal than ferroelectric. Most displays that use a liquid crystal, which exhibit a cholesteric phase typically use chiral nematic liquid crystal. With the use of chiral nematic liquid crystal and memory effect, the liquid crystal device would not have to be continuously refreshed or updated or rewritten. Furthermore, when using chiral nematic liquid crystal, it takes less time to refresh or update the screen. Thus the art of saving power is maximized. It is known that chiral nematic liquid crystal is usually used for large display apparatus's, but to be able to expand this idea to smaller display apparatus such as personal digital assistant's (PDA's) and laptop would very marketable since many consumers now buy PDA'S and laptop for personal and business usage. Claim 2 is dependent on claim 1 and is rejected on the same basis and what is stated above.

As pertaining to claim 16 and 17, it is inherently known, well known in the art and the examiner takes Official Notice that when cholesteric LC is used the display section will reset the

pixels and come to a focal conic state. Furthermore, it is inherently known, well known in the art and the examiner takes Official Notice that when cholesteric LC is used the display section will reset by applying a pulse voltage to untwist the liquid crystal which exhibits a cholesteric phase to each pixel. Also, by applying a voltage to untwist the liquid crystal, this is another way of saying the pixels are to come to a focal conic state. Claim 16 and 17 are dependent on claim 1 and are rejected on the same basis and what is stated above.

3. Claims 3, 4 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuzaki and Ono as applied to claim 1 above, and further in view of Guscott et al. (of record; hereinafter "Guscott"), US 4,728,936.

As pertaining to claims 3 and 4, Matsuzaki and Ono disclose what has previously been stated above.

As pertaining to claims 3 and 4, they do not disclose: a) as pertaining to claim 3, a detecting section which detects a contact action with the screen and having a control section that controls the driving section to write currently displayed information on the display again when a contact is detected, b) as pertaining to claim 4, a touch sensor.

As pertaining to claims 3 and 4, Guscott discloses: a) as pertaining to claim 3, an apparatus that is a touch pad display device (col. 3, lines 8-10), when the display is touched a set of displayed symbols is produced or reproduced (col. 1, lines 58-68; col. 2, lines 1-20 and col. 4, lines 40-48), b) as pertaining to claim 4, it is inherently known that a device that is either a touch panel or touch screen or has a touch pad contains a touch sensor matrix or a touch sensitive matrix (col. 2, lines 21-26).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine the touch pad display device of Guscott with Matsuzaki and Ono.

The suggestion/motivation for doing so would have been to provide a liquid crystal display device that can be touched to either input information or to obtain information. Furthermore, with the use of memory effect, a user is able to write or obtain information via the touch pad and the information will not be distorted or ruined when the display is touched. This idea is already used for personal computers, laptops and PDAs that have screen savers.

Claims 3-4 are dependent on claim 1 and are rejected on the same basis and what is stated above.

As pertaining to claim 26, the combined teaching of Matsuzaki and Ono teaches the invention as claimed in claim 1, and combining the teaching of Guscott as explained above regarding claim 3 teaches the claimed touch panel. Furthermore, Matsuzaki teaches that information is rewritten on the display, thereby preventing displayed information degradation caused by applied pressure.

4. Claims 7-9 and 12-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuzaki and Ono as applied to claim 1 above, and further in view of Chikako, JP 08-035759 (of record).

As pertaining to claims 7-9 and 12-13, Matsuzaki and Ono disclose what has previously been stated above.

As pertaining to claims 7-9 and 12-13, they do not disclose: a) referring to claim 7, explicitly where the power originates from, b) referring to claim 8, a secondary battery and an

external device that is able to recharge the secondary battery by use of terminals, c) referring to claim 9 and 13, the external device is disclosed to be refrigerator and d) referring to claim 12, the liquid crystal display device is functionally able to be attached and detached from an external device.

As pertaining to claims 7-9 and 12-13, Chikako discloses: a liquid crystal display device (paragraph 0014), a) as pertaining to claim 7, an electric power source (paragraph 0010), b) as pertaining to claim 8, a device is able to recharge a battery with the use of AC power (paragraph 0010), c) as pertaining to claims 9 and 13, an external device as refrigerator (paragraph 0001), d) as pertaining to claim 12, a device that is attachable and detachable to an external device (paragraphs 0018, 0021 and 0026).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine the liquid crystal display device, that has an electric power source, it is able to recharge a secondary battery from the electric power source that originates from a refrigerator and is able to be attached and detached from a refrigerator of Chikako with Matsuzaki and Ono.

The suggestion/motivation for doing so would have been to provide an apparatus that can be used for displaying, writing or scanning and is capable of functioning with or without the electric power from a refrigerator. Also, this apparatus is able to function away from the refrigerator as a stand alone unit, thus allowing it to be used much like a personal digital assistant (PDA) or a laptop. Claims 7-9 and 12-13 are dependent on claim 1 and are rejected on the same basis and what is stated above.

5. Claims 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuzaki, Ono and Chikako as applied to claims 1 and 7 above, and further in view of Callahan, Jr. et al. (of record; hereinafter "Callahan"), US 5,726,676 and Nakanishi, US 6,323,851 B1 (of record).

As pertaining to claims 10-11, Matsuzaki, Ono and Chikako disclose what has previously been stated above.

As pertaining to claims 10-11, they do not disclose: a) as pertaining to claim 10, a control section that stops the supply of electric power after writing, b) as pertaining to claim 11, a booster circuit that raises the voltage and applies it to the display section and a control section that stops the supply of electric power to the booster circuit.

As pertaining to claims 10-11 Callahan discloses signal driver circuit for a liquid crystal display: a) as pertaining to claims 10-11, a power standby mode, in which the signal driver controls the data to be written to the display and after the data has been delivered powers down (col. 5, lines 11-15, col. 6, lines 35-44) and Nakanishi discloses a liquid crystal display device: b) as pertaining to claim 11 , a booster circuit that raises the voltage to drive the LCD (col. 1, lines 13-29, col. 4, lines 34-42 and Figure 2, #210).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine the signal driver circuit of Callahan and the booster circuit of Nakanishi with Matsuzaki, Ono and Chikako.

The suggestion/motivation for doing so would have been to provide a liquid crystal display device that is able to conserve power more efficiently. As pertaining to claim 10, once the drivers write or obtain information to the display, the drivers will power down. With the help

of memory effect or memory effect characteristics the information is kept on the display for a predetermined amount of time. Thus, the device does not have to keep powering up the drivers to refresh or rewrite the screen. As pertaining to claim 11, to incorporate a booster circuit would be beneficial. With the help of a booster circuit the drivers are able to write, rewrite, refresh or obtain information to the display much faster than going through a process in which the drivers have to continuously find or generate a certain voltage or voltages to drive the display. Also by incorporating the idea of powering down or inactivating the booster circuit after the drivers have fed the information to the display and using memory effect or memory effect characteristics the drivers would not have to be powered up or kept on all the time to keep the information displayed. Thus, saving power. Claims 10-11 are dependent on claims 1 and 7 and are rejected on the same basis and what is stated above.

6. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuzaki and Ono as applied to claim 1 above, and further in view of Adler et al. (of record; hereinafter "Adler"), US 6,342,901 B1.

As pertaining to claim 14, Matsuzaki and Ono disclose what has previously been stated above.

As pertaining to claim 14, they do not disclose a liquid crystal display device that is able to get a calendar, recipe, picture and date from outside, assuming that outside refers to information not already stored in memory within the device.

As pertaining to claim 14, Adler discloses a portable device that is networked to remote or main processor that is able to obtain different types of information, whether it be email, a

calendar, a picture or anything else (col. 4, lines 29-33, col. 4, lines 46-56, col. 6, lines 17-25) and is able to scan in data manually (col. 27, lines 56-67 and col. 28, lines 1-18 and Figure 24. #2416, Figure 25, #2510).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine the portable device of Adler et al. with Matsuzaki and Ono.

The suggestion/motivation for doing so would have been to provide one single device that is able to receive and store information from different entities. To have a device that is able to receive and store the information of food contents, i.e. dates, a calendar, email, download images, i.e. pictures, recipes etc. is very useful in today's society. Also, by making this device portable it is very practical because it allows a person the flexibility of receiving and storing information within a close proximity while in the kitchen or around the house, much like a PDA, but not as cumbersome as a personal computer or laptop. Claim 14 is dependent on claim 1 and is rejected on the same basis and what is stated above.

7. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuzaki in view of Ono, further in view of Kondoh, US 6,008,787 (of record).

As pertaining to claim 15, Matsuzaki discloses a liquid crystal display which has a liquid crystal display section 17, that uses a FLC or ferroelectric liquid crystal, in which the LC has storage characteristic (col. 1, lines 37-49), which is a memory effect because it has bistable properties (col. 1 line 46), which is sufficient to keep information displayed for at least a day without the application of voltage (i.e., the aligned state is maintained after the electric field is removed; col. 1 lines 44-45); a driving section 26 which drives the display section 17 (col. 4,

lines 32-42), a control section 27 which controls to write currently displayed information on the display again at a specified time (col. 4, line 32-col. 5, line 40). Furthermore, Matsuzaki discloses the control section 27 causes the driving section 26 to rewrite currently displayed information on the display section 17 upon the timers or counters 28 and 29 counting to a predetermined value (col. 4, line 32-col. 5, line 40).

As pertaining to claim 15, Matsuzaki does not disclose the control section causes the display section to be reset before the driving section rewrites currently displayed information upon the time counting to a predetermined value.

As pertaining to claim 15, Ono discloses a display control apparatus in which a refresh driving and partial rewrite driving for updating the display. A timer counts a time during which a rewrite operation in the VRAM is not performed. When a predetermined count time has elapsed, the CPU sends a signal representing the continuous number of display lines to the addressing generator to perform refresh display (col. 2, lines 52-67; col. 3, lines 1-5; col. 7, lines 49-58).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine the display control method of Ono with that of Matsuzaki.

The suggestion/motivation for doing so would have been to provide an LCD that is able to keep an image on the display or screen by using memory effect, thereby using less power, and a timer, in conjunction with memory effect, that is used to update the last image on the display when the timer has counted to a predetermined value. This process or method is great because it would save or at least allow the LCD to have a longer “life” or to be used longer because considerable power is saved by the use of memory effect and the timer. Furthermore, the

information on the display or the speed at which the information can be displayed on the screen can also be increased due to the partial rewriting operation.

As pertaining to claim 15, Kondoh discloses resetting of all the pixels simultaneously each time a pixel is rewritten. Therefore, when the pixels are rewritten they are all reset so when another rewrite happens the pixels will have already been reset (col. 4, line 59-col. 5, line 4).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine the resetting of the pixels of Kondoh with the partial rewrite/refresh of Ono and Matsuzaki.

The suggestion/motivation for doing so would have been to provide for a better display that allows for high speed driving because the speed of rewriting or refreshing an image is increased substantially because all of the pixels are being reset then rewritten or refreshed compared to resetting a row of pixels then rewriting or refreshing and then continuing on with the next row and so forth. Also, the display is able to save power because it uses a storage medium, that is similar to memory effect, within the liquid crystal.

8. Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuzaki, Ono and Kondoh as applied to claim 15 above, and further in view of Unno et al. (of record; hereinafter “Unno”), US 6,233,027 B1.

The combined teaching of Matsuzaki, Ono and Kondoh teaches the invention as claimed in claim 15, but does not specifically teach that the LCD includes a flexible substrate.

Unno discloses a liquid crystal device with substrates 2 and 3 maybe flexible substrates and also the liquid crystal disposed in between the two substrates (col. 5, lines 30-34, Fig. 2).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine the flexible substrate of Unno with Matsuzaki.

The suggestion/motivation for doing so would have been to provide for a better LCD in which the flexible substrate can act as another polarizer or allow the LCD to be used as a touch panel and to reduce weight of the panel. Therefore if used a touch panel it would not be as hard to activate a touch sensor. Most flat panels today have a flexible substrate, in which they replace the glass panel. This allows the panel to be considerably lighter in weight. Thus when used on a surface, i.e., a wall, refrigerator, etc., the weight of the display is reduced because the glass substrate has been removed, thus it is easier to "hang" or to be attached to that surface. Flexible substrates are commonly used on laptop computers.

9. Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuzaki, Ono and Kondoh as applied to claim 15 above, and further in view of Guscott.

The combined teaching of Matsuzaki, Ono and Kondoh teaches the invention as claimed in claim 15, but does not specifically teach that the LCD includes a touch panel.

Guscott discloses: an apparatus that is a touch pad display device (col. 3, lines 8-10), when the display is touched a set of displayed symbols is produced or reproduced (col. 1, lines 58-68; col. 2, lines 1-20 and col. 4, lines 40-48), and the touch panel/screen/pad contains a touch sensor matrix or a touch sensitive matrix (col. 2, lines 21-26).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine the touch pad display device of Guscott with the combined teaching of Matsuzaki, Ono and Kondoh.

The suggestion/motivation for doing so would have been to provide a liquid crystal display device that can be touched to either input information or to obtain information. Furthermore, with the use of memory effect, a user is able to write or obtain information via the touch pad and the information will not be distorted or ruined when the display is touched. This idea is already used for personal computers, laptops and PDAs that have screen savers.

10. Claims 18, 25 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuzaki in view of Unno and further in view of Ono.

As pertaining to claim 18, Matsuzaki discloses a liquid crystal display which has a liquid crystal display section 17, that uses a FLC or ferroelectric liquid crystal, in which the LC has storage characteristic (col. 1, lines 37-49), which is a memory effect because it has bistable properties (col. 1 line 46), which is sufficient to keep information displayed for at least a day without the application of voltage (i.e., the aligned state is maintained after the electric field is removed; col. 1 lines 44-45); a driving section 26 which drives the display section 17 (col. 4, lines 32-42); a control section 27 which controls to write currently displayed information on the display again at a specified time (col. 4, line 32-col. 5, line 40). Furthermore, Matsuzaki discloses the control section 27 causes the driving section 26 to rewrite currently displayed information on the display section 17 upon the timers or counters 28 and 29 counting to a predetermined value (col. 4, line 32-col. 5, line 40).

As pertaining to claim 18, Matsuzaki does not disclose a) stacked layers comprising a first substrate which is flexible which a viewer may view currently displayed information, a second substrate and a liquid crystal material in between the two substrates, the plurality of

layers being stacked such that the first substrate in a layer is positioned closer to a viewer side than the second substrate of the layer and specifically a timer for detecting time elapsing, the time beginning counting when information displayed on the display section is updated.

As pertaining to claim 18, Unno discloses a liquid crystal device with substrates 2 and 3 maybe flexible substrates and also the liquid crystal disposed in between the two substrates (col. 5, lines 30-34, Fig. 2).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine the flexible substrate of Unno with Matsuzaki.

The suggestion/motivation for doing so would have been to provide for a better LCD in which the flexible substrate can act as another polarizer or allow the LCD to be used as a touch panel and to reduce weight of the panel. Therefore if used a touch panel it would not be as hard to activate a touch sensor. Most flat panels today have a flexible substrate, in which they replace the glass panel. This allows the panel to be considerably lighter in weight. Thus when used on a surface, i.e., a wall, refrigerator, etc., the weight of the display is reduced because the glass substrate has been removed, thus it is easier to “hang” or to be attached to that surface. Flexible substrates are commonly used on laptop computers.

As pertaining to claim 18, Ono discloses a display control apparatus in which a refresh driving and partial rewrite driving for updating the display. A timer counts a time during which a rewrite operation in the VRAM is not performed. When a predetermined count time has elapsed, the CPU sends a signal representing the continuous number of display lines to the addressing generator to perform refresh display (col. 2, lines 52-67; col. 3, lines 1-5; col. 7, lines 49-58).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine the display control apparatus of Ono with Matsuzaki and Unno.

The suggestion/motivation for doing so would have been to provide an LCD that is able to keep an image on the display or screen by using memory effect, thereby using less power, and a timer, in conjunction with memory effect, that is used to update the last image on the display when the timer has counted to a predetermined value. This process or method is great because it would save or at least allow the LCD to have a longer "life" or to be used longer because considerable power is saved by the use of memory effect and the timer. Furthermore, the information on the display or the speed at which the information can be displayed on the screen can also be increased due to the partial rewriting operation.

As pertaining to claim 25, the combined teaching of Matsuzaki and Ono teaches the invention as explained regarding claim 1 above. Furthermore, combining the teaching of Unno as explained above regarding claim 18 provides the flexible substrate as specified in claim 25. Matsuzaki furthermore teaches that display information is rewritten, preventing display of degraded information caused by applied pressure.

As pertaining to claim 29, the combined teaching of Matsuzaki, Ono and Unno teaches the invention as explained above regarding claim 18. Furthermore, Matsuzaki teaches that display information is rewritten, preventing display of degraded information caused by applied pressure.

11. Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuzaki, Ono and Unno as applied to claim 18 above, and further in view of Guscott.

The combined teaching of Matsuzaki, Ono and Unno teaches the invention as claimed in claim 18, but does not specifically teach that the LCD includes a touch panel.

Guscott discloses: an apparatus that is a touch pad display device (col. 3, lines 8-10), when the display is touched a set of displayed symbols is produced or reproduced (col. 1, lines 58-68; col. 2, lines 1-20 and col. 4, lines 40-48), and the touch panel/screen/pad contains a touch sensor matrix or a touch sensitive matrix (col. 2, lines 21-26).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine the touch pad display device of Guscott with the combined teaching of Matsuzaki, Ono and Unno.

The suggestion/motivation for doing so would have been to provide a liquid crystal display device that can be touched to either input information or to obtain information. Furthermore, with the use of memory effect, a user is able to write or obtain information via the touch pad and the information will not be distorted or ruined when the display is touched. This idea is already used for personal computers, laptops and PDAs that have screen savers.

12. Claims 19, 23 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuzaki in view of Taka, US 6,085,047 (of record).

As pertaining to claim 19, Matsuzaki discloses a liquid crystal display which has a liquid crystal display section 17, that uses a FLC or ferroelectric liquid crystal, in which the LC has storage characteristic (col. 1, lines 37-49), which is a memory effect because it has bistable properties (col. 1 line 46), which is sufficient to keep information displayed for at least a day without the application of voltage (i.e., the aligned state is maintained after the electric field is

removed; col. 1 lines 44-45); a driving section 26 which drives the display section 17 (col. 4, lines 32-42); a control section 27 which controls to write currently displayed information on the display again at a specified time (col. 4, line 32-col. 5, line 40). Furthermore, Matsuzaki discloses the control section 27 causes the driving section 26 to rewrite currently displayed information on the display section 17 upon the timers or counters 28 and 29 counting to a predetermined value (col. 4, line 32-col. 5, line 40).

As pertaining to claim 19, Matsuzaki does not disclose a manual operating member operable by a user, in which when depressed it rewrites currently displayed information on the display section.

As pertaining to claim 19, Taka discloses using a camera in which when a desired picture is preferred the buttons are released and the image is rewritten (col. 15, lines 41-51).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine the rewrite function of Taka with that of Matsuzaki.

The suggestion/motivation for doing so would have been to provide for a system to have the option of allowing the user to rewrite or refresh the screen when desired. This allows the overall system to save power because it is not constantly being rewritten or refreshed.

As pertaining to claim 23, it is obvious that Taka discloses an operating member for the sole purpose of refreshing or rewriting an image on a display (col. 15, lines 41-51). Claim 23 is dependent on claim 19 and is dependent on the same basis and what is stated above.

As pertaining to claim 24, it would be obvious that when a specified time is reached the image would automatically be refreshed whether an input is made or not. If an input is not made, the display would refresh the image on the screen once the specified time has reached a

predetermined number. If an input is made in order to refresh the screen then once that input is made and to reach the specified time again, would be to start the count down again it would refresh the image again. Claim 24 is dependent on claim 19 and is rejected on the same basis and what is stated above.

13. Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuzaki and Taka as applied to claim 19 above, and further in view of Unno.

The combined teaching of Matsuzaki and Taka teaches the invention as claimed in claim 19 but does not specifically teach that the LCD includes a flexible substrate.

Unno discloses a liquid crystal device with substrates 2 and 3 maybe flexible substrates and also the liquid crystal disposed in between the two substrates (col. 5, lines 30-34, Fig. 2).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine the flexible substrate of Unno with Matsuzaki.

The suggestion/motivation for doing so would have been to provide for a better LCD in which the flexible substrate can act as another polarizer or allow the LCD to be used as a touch panel and to reduce weight of the panel. Therefore if used a touch panel it would not be as hard to activate a touch sensor. Most flat panels today have a flexible substrate, in which they replace the glass panel. This allows the panel to be considerably lighter in weight. Thus when used on a surface, i.e., a wall, refrigerator, etc., the weight of the display is reduced because the glass substrate has been removed, thus it is easier to “hang” or to be attached to that surface. Flexible substrates are commonly used on laptop computers.

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14. Claim 32 is rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuzaki and Taka as applied to claim 19 above, and further in view of Guscott.

The combined teaching of Matsuzaki and Taka teaches the invention as claimed in claim 19, but does not specifically teach that the LCD includes a touch panel.

Guscott discloses: an apparatus that is a touch pad display device (col. 3, lines 8-10), when the display is touched a set of displayed symbols is produced or reproduced (col. 1, lines 58-68; col. 2, lines 1-20 and col. 4, lines 40-48), and the touch panel/screen/pad contains a touch sensor matrix or a touch sensitive matrix (col. 2, lines 21-26).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine the touch pad display device of Guscott with the combined teaching of Matsuzaki and Taka.

The suggestion/motivation for doing so would have been to provide a liquid crystal display device that can be touched to either input information or to obtain information. Furthermore, with the use of memory effect, a user is able to write or obtain information via the touch pad and the information will not be distorted or ruined when the display is touched. This idea is already used for personal computers, laptops and PDAs that have screen savers.

15. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuzaki and Ono as applied to claim 1 above, and further in view of Taka.

As pertaining to claim 22, Matsuzaki and Ono disclose what has previously been stated above.

As pertaining to claim 22, they do not disclose a manual operating member operable by a user, in which when depressed it rewrites currently displayed information on the display section.

As pertaining to claim 22, Taka discloses using a camera in which when a desired picture is preferred the buttons are released and the image is rewritten (col. 15, lines 41-51).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to combine the rewrite function of Taka with that of Matsuzaki and Ono.

The suggestion/motivation for doing so would have been to provide for a system to have the option of allowing the user to rewrite or refresh the screen when desired. This allows the overall system to save power because it is not constantly being rewritten or refreshed. Claim 22 is dependent on claim 1 and is rejected on the same basis and what is stated above.

Response to Arguments

16. Applicant's arguments filed June 23, 2004 have been fully considered but they are not persuasive. Applicant indicates that cyclic refresh driving of the display screen is necessary in Matsuzaki, such that information cannot be displayed for at least a day without voltage application. However, Matsuzaki teaches that the display is bistable and that display state is maintained after the electric field is removed (col. 1 lines 44-46). Accordingly, information can be displayed without voltage application for at least a day.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Aaron S. Ward whose telephone number is (703) 305-8992. The examiner can normally be reached on Monday - Friday, 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven J. Saras can be reached on (703) 305-9720. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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ASW



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